

Paper Id:

121713

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B.TECH
(SEM VII) THEORY EXAMINATION 2019-20
COMMUNICATYION SYSTEM

Time: 3 Hours**Total Marks: 70****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.**2 x 7 = 14**

a.	What is attenuation?
b.	What is the range of frequencies used for TV transmission? What is the common difference between these waves and light waves?
c.	What do you mean by bandwidth? Give the bandwidth of A.M. wave
d.	What is internal noise?
e.	Which modulation is preferred and why: FM or AM.
f.	Explain dispersion.
g.	What is quantization?

SECTION B

2. Attempt any three of the following:**7 x 3 = 21**

a.	Draw the block diagram of essentials of communication system and explain the function of each block.
b.	Derive the expression for Double Side Band Suppressed Carrier Modulation Wave (DSBSC). Discuss working of balance modulator for generation of DSBSC waves with the help of neat diagram.
c.	Determine the Nyist sampling rate and interval for the following signals: i. $\sin c(100\pi t)$ ii. $\sin^2 c(100\pi t)$ iii. $\sin c(100\pi t) + \sin c(100\pi t)$
d.	Discuss the working of Earth-Orbit Satellite System with suitable diagram.
e.	Draw and explain the detailed block diagram of optical fibre communication. List its advantages and disadvantages.

SECTION C

3. Attempt any one part of the following:**7 x 1 = 7**

(a)	Derive an expression for the transmission efficiency of A.M wave.
(b)	Explain Time Division Multiplexing with the help of suitable diagram.

4. Attempt any one part of the following:**7 x 1 = 7**

(a)	What do you mean by Frequency Modulation? How many types of FM are there? Explain any one in detail.
(b)	Explain Noise and its different kinds in detail.

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5. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Explain the working of DPSK with the help of schematic diagram.
(b)	An audio signal has spectral component present in the range of 300 Hz to 3300Hz. A PCM signal is generated by sampling this audio signal at $f_s=8\text{kHz}$. The main value of signal to noise ratio is 30dB. Calculate: <ul style="list-style-type: none"> i. The minimum number of quantization levels, Q and number of binary digits per word N. ii. Signaling rate, r iii. Minimum transmission bandwidth.

6. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Distinguish between sky wave and space wave propagation. Explain with the help of diagram, how space wave are used for line of sight communication?
(b)	Explain Satellite communication. Why is commutation line of sight mode limited to frequencies above 40 MHz.

7. Attempt any *one* part of the following:

7 x 1 = 7

(a)	Consider an optical communication system operation at $\lambda = 800\text{nm}$. Suppose only 1% of optical source frequency of available channel bandwidth for optical communication. How many channel can be accommodated for transmitting <ul style="list-style-type: none"> i. Audio signals requiring the bandwidth of 8 kHz. ii. Video TV signal requiring an approximate bandwidth of 4.5 MHz.
(b)	Discuss the importance and working of Personal Commination System.